

# Joel F. Swift

Postdoctoral Researcher  
Kansas Biological Survey & Center for Ecological Research  
The University of Kansas  
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## Education

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- 2022** Ph.D. Biology, Saint Louis University (St. Louis, MO)  
Dissertation: “The root of it all: Factors controlling the assembly of plant-associated microorganism communities in *Vitis*”  
Advisor: Dr. Allison J. Miller
- 2014** B.S. Integrative Biology, University of Central Missouri (Warrensburg, MO)
- 2012** A.A. State Fair Community College (Sedalia, MO)

## Appointments

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- Summer 2023** NSF Postdoctoral Research Fellow (PRFB), University of Kansas (Lawrence, KS)  
Sponsoring Scientist: Maggie R. Wagner
- 2023 – 2024** National Microbiome Data Collaborative Ambassador (Department of Energy)  
<https://microbiomedata.org/ambassadors/>
- 2022 – Present** Postdoctoral Researcher, University of Kansas (Lawrence, KS)  
PI: Maggie R. Wagner
- 2020 – 2022** Research Assistant, Saint Louis University (St. Louis, MO)  
PI: Allison J. Miller
- 2017 – 2020** NSF Graduate Research Fellow, Saint Louis University (St. Louis, MO)  
PI: Allison J. Miller
- 2015 – 2017** Research Lab Technician, Missouri Botanical Garden (St. Louis, MO)  
PI: Christy E. Edwards

## Fellowships and Awards

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- 2023-2026** NSF Postdoctoral Research Fellowship in Biology (\$80,000/year)
- 2023** National Microbiome Data Collaborative Ambassador Honorarium (\$1,000)
- 2021** Donald Danforth Plant Science Center Committee for Scientific Training and Mentoring Professional Development Award (\$99, covered conference registration)
- 2017 – 2022** NSF Graduate Research Fellowship (\$34,000/year)
- 2019** Biology Department travel award (\$1,000)  
Graduate Student Association travel award (\$300)

2018	Graduate Student Association travel award (\$300)
2014	NSF REU Mentor-Student travel grant (\$3,000)
2014	University of Central Missouri Biology Foundation Scholarship (\$500)
2014	University of Central Missouri Student Leadership Award (Non-monetary)

## Publications

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{[Google Scholar Profile](#)}

- 14 **Joel F. Swift**, Matthew R. Kolp, Amanda Carmichael, Natalie E. Ford, Paige M. Hansen, Benjamin A. Sikes, Manuel Kleiner, Maggie R. Wagner. Legacy effects of precipitation and land use impact maize growth and microbiome assembly under drought stress. *Preprint*. [bioRxiv](#).
- 13 Zoë Migicovsky, **Joel F. Swift**, Zachary Helget, Laura L. Klein, Anh Ly, Matthew Maimaitiyiming, Karoline Woodhouse, Anne Fennell, Misha Kwasniewski, Allison J. Miller, Daniel H. Chitwood, Peter Cousins. Grapevine leaf size influences vine canopy temperature. *Preprint*. [bioRxiv](#).
- 12 Zoë Migicovsky, Michelle Y. Quigley, Joey Mullins, Tahira Ali, **Joel F. Swift**, Anita Rose Agasaveeran, Joseph D. Dougherty, Brendan Michael Grant, Ilayda Korkmaz, Maneesh Reddy Malpeddi, Emily L. McNichol, Andrew W. Sharp, Jackie L. Harris, Danielle R. Hopkins, Lindsay M. Jordan, Misha T. Kwasniewski, R. Keith Striegler, Asia L. Dowtin, Stephanie Stotts, Peter Cousins, Daniel H. Chitwood. "X-ray imaging of 30 year old wine grape wood reveals cumulative impacts of rootstocks on scion secondary growth and harvest index." *Horticulture Research* 10.1 (2023): uhac226. [Open Access](#)
- 11 Richard F. Lance, Xin Guan, **Joel F. Swift**, Christine E. Edwards, Denise L. Lindsay, and Eric R. Britzke. Multifaceted DNA Metabarcoding of Guano to Uncover Multiple Classes of Ecological Data in Two Different Bat Communities. *Evolutionary Applications* 15.7 (2022): 1189-1200. [Open Access](#)
- 10 Zoe Migicovsky, **Joel F. Swift**, Zachary Helget, Laura L. Klein, Anh Ly, Matthew Maimaitiyiming, Karoline Woodhouse, Anne Fennell, Misha Kwasniewski, Allison J. Miller, Peter Cousins, Daniel H. Chitwood. Increases in vein length compensate for leaf area lost to lobing in grapevine. *American Journal of Botany*, 109.7 (2022): 1063-1073. [Open Access](#)
- 9 Zachary N. Harris, Laura L. Klein, Mani Awale, **Joel F. Swift**, Zoë Migicovsky, Niyati Bhakta, Emma Frawley, Daniel H. Chitwood, Anne Fennell, Laszlo G. Kovacs, Misha T. Kwasniewski, Jason P. Londo, Qin Ma, Allison J. Miller. Root system influence on high dimensional leaf phenotypes over the grapevine growing season. *GigaScience* 10.12 (2021): giab087. [Open Access](#)
- 8 Elena M. Meyer\*, **Joel F. Swift**, Burgund Bassüner, Stacy A. Smith, Eric S. Menges, Brad Oberle, and Christine E. Edwards. Understanding how an amphicarpic species with a mixed mating system responds to fire: a population genetic approach. *AoB Plants* 13.6 (2021): plab067. \*REU intern [Open Access](#)
- 7 Rebekah A. Mohn\*, Nora H. Oleas, Adam B. Smith, **Joel F. Swift**, George A. Yatskievych, and Christine E. Edwards. "The phylogeographic history of a range disjunction in eastern North America: the role of post-glacial expansion into newly suitable habitat." *American Journal of Botany* 108.6 (2021): 1042-1057. \*REU intern
- 6 Christine E. Edwards, Brooke C. Tessier\*, **Joel F. Swift**, Burgund Bassüner, Alexander G. Linan,

- Matthew A. Albrecht, and George A. Yatskievych. Conservation genetics of the federally threatened plant species *Physaria filiformis* (Missouri bladderpod) reveals strong genetic structure and a possible cryptic species. *PLOS ONE* 16.3 (2021). \***REU intern** [Open Access](#)
- 5 **Joel F. Swift**, Megan E. Hall, Zachary N. Harris, Misha T. Kwasniewski, Allison J. Miller. Grapevine Microbiota Reflect Diversity among Compartments and Complex Interactions within and among Root and Shoot Systems. *Microorganisms* 9.1 (2021): 92. [Open Access](#)
- 4 Christine E. Edwards, **Joel F. Swift**, Richard F. Lance, Thomas A. Minckley, and Denise L. Lindsay. Evaluating the efficacy of sample collection approaches and DNA metabarcoding for identifying the diversity of plants utilized by nectivorous bats. *Genome* 62.1 (2018): 19-29. [Genome Publication Award 2019](#)
- 3 **Joel F. Swift**, Richard Lance, Xin Guan, Eric R. Britzke, Denise L. Lindsay, and Christine E. Edwards. Multifaceted DNA metabarcoding: validation of a non-invasive, next-generation monitoring approach to measure critical population parameters in bats. *Evolutionary Applications* 11.7 (2018): 1120-1138. [Open Access](#)
- 2 Denise L. Lindsay\*, **Joel F. Swift\***, Michael G. Jung, Richard F. Lance, and Christine E. Edwards. A comparison of patterns of genetic structure in two co-occurring *Agave* species (Asparagaceae) that differ in the patchiness of their geographical distributions and cultivation histories. *Botanical Journal of the Linnean Society* 186.3 (2018): 361-373. \***Equal authorship**
- 1 **Joel F. Swift**, Stacy A. Smith, Eric S. Menges, Burgund Bassüner, & Christine E. Edwards. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, Lewton's polygala (*Polygala lewtonii*). *Conservation genetics* 17.6 (2016): 1269-1284.

## Grants

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- 2018 Missouri Grape and Wine Institute. "Impacts of grafting and irrigation on above and below ground microbial communities" PI: Allison J. Miller; Co-PI: Megan Hall, Misha Kwasniewski, and **Joel F. Swift**. (\$14,024)

## Presentations

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### Invited Talks

- 2022 **Swift, J. F.** From roots to shoots, the impact of grafting on Vitis microbiota. University of Missouri, Show Me Grape and Wine Symposium.
- 2021 **Swift, J. F.** Putting together the pieces: Grafted grapevine microbiomes. Saint Louis University, Biology Department Retreat.  
**Swift, J. F.**, Hall, M. E, Harris, Z. N., Kwasniewski M. T., and Miller, A. J. Grafting and Vitis Microbiota. "Vitimmeet" (Grapevine research working group). Virtual presentation.
- 2017 **Swift, J. F.**, Lance, R. F., Guan, X., Britzke, E., Lindsay, D., and Edwards, C. E. Multifaceted DNA Metabarcoding for Noninvasive Studies of Bats. International Barcode of Life Conference, Kruger National Park, South Africa.
- 2016 **Swift, J. F.** An introduction to Conservation Genetics. Advocating Translational Genetics/Genomics Conference, Harris-Stowe State University, St. Louis, MO.
- 2014 **Swift, J. F.**, Smith, S. A., Menges, E. S., Bassüner, B., and Edwards, C. E. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, *Polygala lewtonii*. University of Central Missouri, Warrensburg, MO.

### Contributed talks and posters

- 2022** **Swift, J. F.**, Migicovsky, Z., Trello, G. E., Miller, A. J. Grafted grapevine microbiota varies across space, time, and scion/rootstock combinations. **Oral Presentation.** Botany 2022, Anchorage, AK.
- 2021** **Swift, J. F.**, Migicovsky, Z., Miller, A. J. Grafted grapevine microbiota across space, time and scion/rootstock combinations. **Poster Presentation.** Nature conference “Harnessing the Plant Microbiome”, UC Davis: Virtual Conference.
- 2020** **Swift, J. F.**, Hall, M., Kwasniewski M. T., Miller, A. J. The root of it all: Factors influencing plant-associated microorganism communities in *Vitis*. **Oral Presentation.** Botany 2020: Virtual conference.
- Swift, J. F.** and Rubin, M. J. Perennial crops: Untapped variation. **Oral presentation.** North American Raspberry and Blackberry Conference. St. Louis, MO
- 2019** **Swift, J. F.** How do grapevine roots affect the vine and your wine? **Oral presentation.** St. Louis Science Center, Science Uncorked event, St. Louis, MO.
- Swift, J. F.**, Hall, M., Kwasniewski M. T., Miller, A. J. The root of it all: Factors influencing plant-associated microorganism communities in *Vitis*. **Poster Presentation.** Donald Danforth Plant Science Center 20<sup>th</sup> Annual Fall Symposium, St. Louis, MO.
- Swift, J. F.**, Hall, M., Kwasniewski M. T., Miller, A. J. The root of it all: Factors influencing plant-associated microorganism communities in *Vitis*. **Poster Presentation.** St. Louis Ecology, Evolution, and Conservation Symposium, St. Louis, MO.
- Swift, J. F.**, Hall, M., Kwasniewski M. T., Miller, A. J. The root of it all: Factors influencing plant-associated microorganism communities in *Vitis*. **Poster Presentation.** 2019 North American Grape Breeders Conference, Springfield, MO.
- Swift, J. F.**, Hall, M., Kwasniewski M. T., Miller, A. J. The root of it all: Factors influencing plant-associated microorganism communities in *Vitis*. **Poster Presentation.** Plant Biology 2019, San Jose, CA.
- 2018** **Swift, J. F.** & Miller, A. J. To the root of it all: The role of agricultural practices in shaping plant-associated microbial communities in *Vitis*. **Oral Presentation.** St. Louis University Research Colloquium, St. Louis, MO.
- Swift, J. F.**, Lance, R. F., Guan, X., Britzke, E., Lindsay, D., and Edwards, C. E. Multifaceted DNA metabarcoding to address critical data gaps for threatened bat species. **Oral Presentation.** Graduate Student Association St. Louis University, St. Louis, MO.
- Swift, J. F.**, Lance, R. F., Guan, X., Britzke, E., Lindsay, D., and Edwards, C. E. Multifaceted DNA metabarcoding to address critical data gaps for threatened bat species. **Poster presentation.** Joint Genome Institute Genomics of Energy and Environment, San Francisco, CA.
- 2017** **Swift, J. F.**, Smith, S. A., Menges, E. S., Bassüner, B., and Edwards, C. E. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, *Polygala lewtonii*. **Oral presentation.** Botany 2017, Fort Worth, TX.
- Swift, J. F.**, Lance, R. F., Guan, X., Britzke, E., Lindsay, D., and Edwards, C. E. What goes in must come out? (DNA metabarcoding dietary analysis of *Antrozous pallidus*). **Lighting talk.** Biodiversity and Beers, St. Louis, MO.
- 2016** **Swift, J. F.**, Bassüner, B., and Linan, A. G. How GIS is used in Conservation Genetics. **Poster and Booth Presentation.** Lindenwood University GIS Day, Saint Charles, MO.
- Lindsay, D., **Swift, J. F.**, Jung, M. G., Lance, R. F., and Edwards, C. E. A comparison of the effects of continuous versus patchy geographic distribution on the structuring of genetic variation in two *Agave* species (Agavaceae) with similar life history strategies. **Poster Presentation.** Ecological Genomics, Kansas City, MO.
- Lindsay, D., **Swift, J. F.**, Jung, M. G., Lance, R. F., and Edwards, C. E. A comparison of the effects of continuous versus patchy geographic distribution on the structuring of genetic variation in two *Agave* species (Agavaceae) with similar life history strategies. **Poster Presentation.** St. Louis Ecology, Evolution, and Conservation Symposium, St. Louis, MO.
- Lindsay, D., **Swift, J. F.**, Jung, M. G., Lance, R. F., and Edwards, C. E. A comparison of the effects of continuous versus patchy geographic distribution on the structuring of genetic variation in two *Agave* species (Agavaceae) with similar life history strategies. **Poster Presentation.** Botany 2016, Savannah, GA.
- 2015** **Swift, J. F.** and Bassüner, B. Diverse uses of GIS in Conservation Genetics. **Poster and Booth Presentation.** Lindenwood University GIS Day, Saint Charles, MO.
- Swift, J. F.**, Lance, R. F., Guan, X., Britzke, E., Lindsay, D., and Edwards, C. E. Multifaceted DNA metabarcoding to address critical data gaps for threatened bat species. **Poster Presentation.** Ecological Genomics, Manhattan, KS.

**Swift, J. F.**, Smith, S. A., Menges, E. S., Bassüner, B., and Edwards, C. E. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, *Polygala lewtonii*. **Poster Presentation.** Joint Fall Symposium, From Darwin to Borlaug, St. Louis, MO.

**Swift, J. F.**, Smith, S. A., Menges, E. S., Bassüner, B., and Edwards, C. E. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, *Polygala lewtonii*. **Poster Presentation.** St. Louis Ecology, Evolution, and Conservation Symposium, St. Louis, MO.

2014

**Swift, J. F.**, Smith, S. A., Menges, E. S., Bassüner, B., and Edwards, C. E. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, *Polygala lewtonii*. **Poster Presentation.** Council on Undergraduate Research: Research Experiences for Undergraduates Symposium, Washington D.C.

**Swift, J. F.**, Smith, S. A., Menges, E. S., Bassüner, B., and Edwards, C. E. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, *Polygala lewtonii*. **Poster Presentation.** Systematics Symposium, St. Louis, MO.

**Swift, J. F.**, Smith, S. A., Menges, E. S., Bassüner, B., and Edwards, C. E. Analysis of mating system and genetic structure in the endangered, amphicarpic plant, *Polygala lewtonii*. **Oral and Poster Presentation.** Research Experience for Undergraduates, St. Louis, MO.

## Mentoring & Teaching

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2021

Economic Botany 3450 (Saint Louis University) | Teaching Practicum (w/ Allison Miller) helped to lead a class of 43 upper-level undergraduates. Lead three lectures on various topics related, “Plant Diversity, Distributions, and Conservation”, “Agricultural Revolutions, from Vavilov to Borlaug” and “Agave”. Assisted in constructing tests and assessment devices to gauge student’s grasp of learning objectives.

Matt Hillz (Saint Louis University), Sam Selby and Toni Johnson (Research Technicians, Miller Lab) | Trained in ionomics sample preparation and grapevine leaf land marking.

Avonelle Lindon (Collegiate School of Medicine and Bioscience High School) and Eve Rosenblum (Metro Academic and Classical High School) | Summer research interns that spent three weeks with the Miller Lab across various projects. I lead their training in grapevine leaf land marking and supervised their progress.

2019 Fall – 2020 spring

Grace Trello (Saint Louis University) | Trained in molecular lab and data analysis. Conducted DNA extractions, PCR, gel electrophoresis and data analysis in R.

2019 Summer interns

Dalton Gillig (University of Missouri), Zachary Helget (South Dakota State University), Anh Ly (Missouri State University), and Vy Nguyen (Missouri State University) | These interns were trained in field collection techniques and assisted in collections from vineyards across California’s central valley for 2 weeks each. They were also exposed to academic and industry experiences (e.g. visits/ tours of Wonderful Nursery and UC Davis Foundation Plant Services).

2018 Summer interns

Leah Brand (Missouri State University), Julie Curless (Missouri State University), and Karoline Woodhouse (South Dakota State University) | These interns were trained in field collection techniques and assisted in collections from vineyards across California’s central valley for 2 weeks each. They were also exposed to academic and industry experiences (e.g. visits/ tours of Duarte Nursery, USDA Parlier station, and Fresno State Grape Day).

2017 REU intern (co-mentor)

[Elena Meyer](#) (New College, FL; Now pursuing PhD in Biology @ Virginia Commonwealth University, VA) | Project: The effect of fire on the genetic diversity in *Polygala lewtonii*.

2016 REU intern (co-mentor)

[Brooke Tessier](#) (Winona State University, MN; Now Lab Tech @ STERIS Corporation, Saint Paul, MN) | Project: Conservation genetics of *Physaria globose*.

- 2016 REU intern (co-mentor)** Caitlyn Foye (Butler University, IN) | Project: Parentage analysis of the *Ziziphus celata*.
- 2015 REU intern (co-mentor)** [Rebekah Mohn](#) (Formerly Miami University, OH; Now pursuing PhD @ University of Minnesota, MN) | Project: Genetic analysis of disjunction in *Delphinium exaltatum*.

## Outreach

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- 2022** “Move-N-Learn” tour of KU greenhouses – Described the research being conducted on Maize and *Tripsacum* in the Wagner lab.  
Data Carpentry Genomics Workshop – Served as a helper for workshop; answered questions from learners and troubleshooted issues with various operating systems for learners via breakout room sessions.
- 2020** Raspberry Pi Jam 2020 (Donald Danforth Plant Science center – Lead children in hands on activities in soldering and setting up Minecraft servers using Raspberry Pi’s.
- 2019** STEM day at Meadows Elementary School – Lead an activity to introduce 4<sup>th</sup> and 5<sup>th</sup> graders (approx. 120) to biofilm formation and function (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3867766/>).  
Raspberry Pi Jam 2019 (Donald Danforth Plant Science center – Lead children in hands on activities in soldering.
- 2018** Science Uncorked event (St. Louis Science Center)  
Grapes at the Garden event (Missouri Botanical Garden)  
Missouri Botanical Garden Science and Research Public Open House.  
Science on Tap event (St. Louis Science Center)
- 2017** Botanical Society of America Plant Science Mentor.  
Missouri Botanical Garden Science and Research Public Open House.
- 2016** Missouri Botanical Garden Science and Research Public Open House.  
Presentation on Bats and DNA metabarcoding in cooperation with Missouri Botanical Garden Education Division. Multiple Middle and High school groups from the greater St. Louis area.  
ECOACT Mentor in cooperation with Missouri Botanical Garden Education Division. Provided resources and advice to a group of high school students working on understanding people's thoughts on/promoting urban pollinator habitats.
- 2015** Missouri Botanical Garden Science and Research Public Open House.  
Podcast interview on Conservation Genetics and *Polygala lewtonii* on the In Defense of Plants Podcast, <http://www.indefenseofplants.com/podcast/2015/10/25/ep-32-conservation-genetics>
- 2014** Missouri Junior Academy of Science Poster Judge  
College for a Day event; helped lead exercise extracting DNA from strawberries with high school students from the surrounding community.

## Journal peer review

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- Functional Ecology
- Plants, People, Planet
- Plant and Soil
- BMC Microbiology
- Polish Journal of Microbiology

- Conservation genetics

## Professional Societies

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- 2016 – Present** Botanical Society of America
- 2018 – Present** American Association for the Advancement of Science
- 2019 – Present** American Society for Plant Biologists

## References

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<b>Reference &amp; contact info.</b>	<b>Role</b> – Skills the reference can speak to
<p>Dr. Maggie Wagner The University of Kansas 1200 Sunnyside Avenue Lawrence, KS 66045 maggie.r.wagner@ku.edu (785) 864-0074</p>	<p><b>Postdoctoral Research Advisor</b> - Plant microbiome analysis; plant phenotyping and analysis; project design, development, management; experimental design and data analysis; grant/publication writing; collaboration, student mentoring.</p>
<p>Dr. Allison Miller Danforth Plant Science Center 975 N. Warson Rd. Saint Louis, MO 63132 Allison.j.miller@slu.edu (314) 348-8971</p>	<p><b>Ph.D. Advisor</b> – Plant microbiome analysis; project design, development, management; molecular/field work; experimental design and data analysis; grant/publication writing; collaboration, teaching, student mentoring, and outreach.</p>
<p>Dr. Christy Edwards Missouri Botanical Garden 4344 Shaw Blvd. St. Louis, MO 63110 christy.edwards@mobot.org (314) 577-9473 x6244</p>	<p><b>Former supervisor</b> – Plant conservation genetics and genomics; Animal DNA metabarcoding; molecular/field work; experimental design, coding, and data analysis; publication writing; collaboration and student mentoring.</p>
<p>Dr. Richard Lance Research Biologist U.S. Army Corps of Engineers Environmental Laboratory 3909 Halls Ferry Rd. Vicksburg, MS 39180 richard.f.lance@us.army.mil (601) 634-3971</p>	<p><b>Collaborator</b> – Plant population genetics; Animal DNA metabarcoding; molecular/field work; experimental design, coding, and data analysis; publication writing and governmental technology transfers.</p>